

### **REMARKS**

Applicant has amended FIGS. 25 and 26 to add the legend "Prior Art," canceled claim 20 without prejudice or disclaimer of its subject matter, and amended claims 5, 6, 9, 12, 14, 16, and 19 to more appropriately define the present invention. Claims 1-19 are pending, with claims 1-4 withdrawn from consideration, and claims 5-19 under current examination.

#### **Regarding the Office Action:**

In the Office Action, the Examiner rejected claim 20 under 35 U.S.C. § 102(b) as being anticipated by Ast et al. (U.S. Patent No. 5,516,724) ("Ast"); rejected claims 10-16 under 35 U.S.C. § 103(a) as being unpatentable over Ohuchi (U.S. Patent No. 6,762,468) ("Ohuchi") in view of Ast and Bar-Gadda (U.S. Patent No. 6,579,805) ("Bar-Gadda"); rejected claims 17-20 under 35 U.S.C. § 103(a) as being unpatentable over "admitted prior art" (APA) in view of Ast and Bar-Gadda; rejected claims 5-9, 12-16, and 19 under 35 U.S.C. § 112, second paragraph as being indefinite; and objected to the drawings. Applicant traverses the rejections for the following reasons.<sup>1</sup>

#### **Regarding the Amendments to the Drawings:**

Applicant has amended FIGS. 25 and 26 to include the legend "Prior Art." Accordingly, Applicant files herewith one (1) sheet of drawings, labeled "Replacement Sheet," containing amended FIGS. 25 and 26. Applicant requests that these replacement sheets be made of official record in the above-identified patent application. If the drawings for any reason are not in full compliance with the pertinent statutes and regulations, please so advise the undersigned.

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<sup>1</sup> The Office Action contains statements characterizing the related art, case law, and the claims. Regardless of whether any such statements are specifically identified herein, Applicant declines to automatically subscribe to any statements in the Office Action.

**Rejection of Claims 5-9, 12-16, and 19 under 35 U.S.C. § 112, second paragraph:**

Applicant disagrees with the Examiner's allegations that claims 5-9, 12-16, and 19 are indefinite. To advance prosecution, however, Applicant has amended claims 5, 6, 9, 12, 14, 16, and 19 to more appropriately define the present invention, thereby improving clarity and rendering the claim language more consistent with the description in the specification.

Applicant points out that claims 5-9, 12-16, and 19 more than adequately "meet[]" the threshold requirements of clarity and precision" (M.P.E.P. § 2173.02). Applicant requests withdrawal of the rejection.

**Rejection of Claim 20 under 35 U.S.C. § 102(b):**

The rejection of claim 20 has been rendered moot by the cancellation of this claim, without prejudice or disclaimer of its subject matter. Therefore, the 35 U.S.C. § 102(b) rejection should be withdrawn.

**Rejection of Claims 10-16 under 35 U.S.C. § 103(a):**

Applicant respectfully traverses the rejection of claims 10-16 under 35 U.S.C. § 103(a) as being unpatentable over Ohuchi in view of Ast and Bar-Gadda. Applicant disagrees with the Examiner's arguments and conclusions. A *prima facie* case of obviousness has not been established.

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." M.P.E.P. § 2142, 8th Ed., Rev. 2 (May 2004), p. 2100-128.

Here, a *prima facie* case of obviousness has not been established because, among other things, Ohuchi, Ast, and Bar-Gadda, taken alone or in combination, fail to teach or suggest each and every feature of Applicant's claims.

The Examiner admitted that "Ohuchi differs from the claims in not disclosing that the oxidation atmosphere contains an oxidant for selectively oxidizing Si and a reductant for reducing Ge" (Office Action, pp. 3-4). The Examiner alleged, however, that despite Ohuchi's deficiencies, "[i]t would have been obvious to [...] oxidize the SiGe gate electrode 8a in steam as suggested by Ast [...]" (Office Action, p. 4). The Examiner further alleged that "Bar-Gadda discloses that steam for use in an oxidation process for producing silicon dioxide [...]" (Office Action, p. 4).

Regardless of whether the Examiner's allegations are true, which Applicant does not concede, the combination of these references still does not teach or suggest at least the following elements of claims 10 and 13:

thermal-oxidizing the gate electrode in an atmosphere that contains an oxidant for oxidizing Si and a reductant for reducing Ge to form a sidewall insulating film on a sidewall surface of the gate electrode. (claim 10)

thermal-oxidizing the monocrystal layer in an atmosphere that contains an oxidant and a reductant as an oxidation seed to form an oxide film made of one of said at least two kinds of semiconductors on a surface of the monocrystal layer. (claim 13)

Neither Ast nor Bar-Gadda teach or suggest at least these elements. That is, they do not teach or suggest use of an atmosphere that contains an oxidant and a reductant. Moreover, despite the Examiner's application of Bar-Gadda, the reference does not teach or suggest H<sub>2</sub> being used as a reductant, as claimed by Applicants in claims 11, 12, 15, and 16.

In addition, *prima facie* obviousness has not been established at least because the requisite motivation to modify Ohuchi, Ast, and Bar-Gadda is lacking. Determinations of obviousness must be supported by evidence on the record. *See In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001) (finding that the factual determinations central to the issue of patentability, including conclusions of obviousness by the Board, must be supported by “substantial evidence”). Further, the desire to modify a reference must be proved with “substantial evidence” that is a result of a “thorough and searching” factual inquiry. *See In re Lee*, 277 F.3d 1338, 1343-1344 (Fed. Cir. 2002) (quoting *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52).

In the rejection, the Examiner has not shown that one of ordinary skill in the art, when considering Ohuchi, Ast, and Bar-Gadda, and not having the benefit of Applicant’s disclosure, would have been motivated to modify any or all of these references in a manner resulting in Applicant’s claimed invention. The Examiner alleged that it “would have been within the level of one skilled in the art” (Office Action, p. 4), however, the Examiner’s allegations are not properly supported by substantial evidence, and do not explain how one of ordinary skill in the art would have modified Ohuchi, Ast, and Bar-Gadda in the way the Examiner proposes. The Examiner provides no evidence, beyond generic allegations of it being “within the level of one skilled in the art” (*Id.*) in an attempt to show that one of ordinary skill in the art would have been motivated to combine these references to produce the claimed invention.

Applicant directs the Examiner’s attention to M.P.E.P. § 2143.01, which makes clear that: “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination”

(citations omitted). Here, the Examiner does not show that Ohuchi, Ast, and Bar-Gadda “suggests the desirability” of the alleged combination.

Finally, Applicant disputes the Examiner’s presumed taking of Official Notice that

In light of the fact shown by Bar-Gadda, it is therefore believed that H<sub>2</sub> is still present in steam to some extent because not all H<sub>2</sub> takes place in the reaction to form H<sub>2</sub>O. This fact is manifested by the result (silicon is oxidized while germanium is not) obtained in Ast’s oxidation atmosphere of steam, which result is identical to that [] disclosed in the pending specification. Therefore, absent eviden[ce] to the contrary, Ast’s oxidation atmosphere contains an oxidant (H<sub>2</sub>O) for oxidizing Si and a reductant (H<sub>2</sub>) for reducing Ge as claimed. See Office Action, p. 4.

In response, Applicant refers the Examiner to the February 21, 2002 Memorandum from USPTO Deputy Commissioner for Patent Examination Policy, Stephen G. Kunin, regarding “Procedures for Relying on Facts Which are Not of Record as Common Knowledge or for Taking Official Notice.” In relevant part, the Memorandum states, “If the examiner is relying on personal knowledge to support the finding of what is known in the art, the examiner must provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding” (Memorandum, p. 3). Applicant submits that the Examiner made generalized statements regarding oxidation (“it is therefore believed”), without any documentary evidence to support it, and attempted to apply this against Applicant’s claims with the only “support” being the highly subjective allegation that it “would have been obvious” (See Office Action, p. 4).

Applicant respectfully directs the Examiner’s attention to M.P.E.P. § 2144.03, which sets forth that “the notice of facts beyond the record which may be taken by the examiner must be “capable of such instant and unquestionable demonstration as to defy dispute”.” “It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference

where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known.” *See* M.P.E.P. § 2144.03, internal citations omitted, emphasis in original.

Applicant therefore traverses the Examiner’s reliance on conclusions which have not factually been made of record as being common knowledge, noting the impropriety of this action, as the Federal Circuit has “criticized the USPTO’s reliance on ‘basic knowledge’ or ‘common sense’ to support an obviousness rejection, where there was no evidentiary support in the record for such a finding.” Memorandum at 1. Applicant respectfully submits that “[d]eficiencies of the cited references cannot be remedied by ... general conclusions about what is “basic knowledge” or “common sense.”” *In re Lee*, 61 USPQ2d 1430, 1432-1433 (Fed. Cir. 2002), quoting *In re Zurko*, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001).

Should the Examiner maintain the 35 U.S.C. § 103(a) rejection after considering the arguments presented herein, Applicant respectfully submits that the Examiner must provide “the explicit basis on which the examiner regards the matter as subject to official notice and [allow Applicant] to challenge the assertion in the next reply after the Office action in which the common knowledge statement was made” (Memorandum at 3, emphasis in original), or else withdraw the rejection.

Applicant has therefore established that Ohuchi, Ast, and Bar-Gadda do not teach or suggest each and every element of Applicant’s independent claims 10 and 13. Therefore, the Examiner’s reliance on Ohuchi, Ast, and Bar-Gadda fails to establish *prima facie* obviousness. Claims 10 and 13 are allowable, and dependent claims 11, 12, and 14-16 are also allowable at least by virtue of their respective dependence from allowable base claim 10 or 13. Therefore, the improper 35 U.S.C. § 103(a) rejection should be withdrawn.

**Rejection of Claims 17-20 under 35 U.S.C. § 103(a):**

Applicant respectfully traverses the rejection of claims 17-20 under 35 U.S.C. § 103(a) as being unpatentable over APA in view of Ast and Bar-Gadda. Applicant disagrees with the Examiner's arguments and conclusions. A *prima facie* case of obviousness has not been established.

The previous arguments against Ast and Bar-Gadda presented above, pertaining to independent claims 10 and 13, are incorporated here by reference.

Applicant has already established that Ohuchi, Ast, and Bar-Gadda do not teach or suggest all the elements of independent claims 10 and 13, and that their combination is improper. The Examiner's use of APA in combination with Ast and Bar-Gadda against independent claim 17, however, still does not establish *prima facie* obviousness of the claimed invention.

In contrast to the claimed invention, and as the Examiner admitted,

[t]he admitted prior art differs from the claims in that while the admitted prior art forms the gate insulating film by conventional oxidation process that results in a gate oxide film containing SiO<sub>2</sub> and GeO<sub>2</sub>, the claims fall for an oxidation process in an atmosphere that contains an oxidant for oxidizing Si and a reductant for reducing Ge so that the gate insulating film is made of substantially silicon oxide (Office Action, p. 6).

This, coupled with the fact that Applicant already established that neither Ast nor Bar-Gadda teach or suggest use of an atmosphere that contains an oxidant and a reductant, demonstrates the inability of Ast and Bar-Gadda to cure the deficiencies of APA. That is, APA, Ast, and Bar-Gadda fail to teach or suggest at least the claimed

wherein the gate insulating film is formed on a surface of the SiGe monocrystal layer by thermal-oxidizing the SiGe monocrystal layer in an atmosphere that contains an oxidant for oxidizing Si, and a reductant for reducing Ge, and the gate insulating film is made of substantially silicon oxide (claim 17).

Moreover, Applicant incorporates by reference the arguments in the previous section that demonstrate lack of motivation to combine the cited references and the impropriety of the Examiner's presumed taking of Official Notice. In this rejection as well, the Examiner has not established that there would be any motivation to combine the references, from within the references themselves. Further, the Examiner's presumed taking of Official Notice ("it is therefore believed that H2 is still present in steam to some extent..." (Office Action, p. 7)) is not proper.

Should the Examiner maintain the 35 U.S.C. § 103(a) rejection after considering the arguments presented herein, Applicant respectfully submits that the Examiner must provide "the explicit basis on which the examiner regards the matter as subject to official notice and [allow Applicant] to challenge the assertion in the next reply after the Office action in which the common knowledge statement was made" (Memorandum at 3, emphasis in original), or else withdraw the rejection.

Applicant has therefore established that APA, Ast, and Bar-Gadda do not teach or suggest each and every element of Applicant's independent claim 17. Therefore, the Examiner's reliance on APA, Ast, and Bar-Gadda fails to establish *prima facie* obviousness. Claim 17 is allowable, and dependent claims 18 and 19 are also allowable at least by virtue of their dependence from allowable base claim 17. Therefore, the improper 35 U.S.C. § 103(a) rejection should be withdrawn.

**Conclusion:**

In view of the foregoing, Applicant requests reconsideration of the application and withdrawal of the objection and rejections. Pending claims 5-19 are in condition for allowance, and Applicant requests a favorable action.



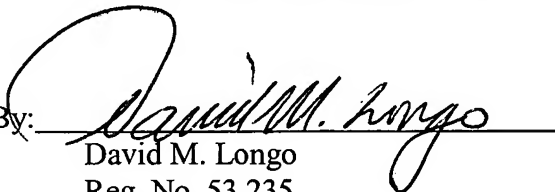
Applicant encourages the Examiner to contact the undersigned representative by telephone to discuss any remaining issues or to resolve any misunderstandings.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: March 29, 2005

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